

### REMARKS

Claims 6 and 10 have been amended to more clearly define Applicants' invention, reciting that product, ethyl acetate, is recycled as an azeotroping agent. Support for the amendment can be found, for example, at page 6, lines 24 to 26, and page 7, lines 4 to 6 of the specification. No new matter has been added. Claims 6 to 11 are pending. Claims 6 and 10 are independent.

Preliminarily, Applicants thank the Examiner for the courtesy of an interview with Applicants' representative, Michael W. Ferrell, on July 15, 2003. The differences between United States Patent No. 5,231,222 to *Papa* and the present invention were discussed. Applicants agreed to file an *RCE* application and provide any available additional evidence of unexpected results from the claimed process.

### **Rejection under 35 U.S.C. 103(a)**

Claims 6 to 11 have been rejected over United States Patent No. 5,231,222 to *Papa et al.* ("*Papa*") combined with United States Patent No. 5,248,427 to *Spiske et al.* ("*Spiske*"). Claims 6 and 10 are independent, and are accordingly discussed separately below.

As amended, the claims better differentiate over the art and are believed to put this case in condition for allowance.

### **Independent claim 6 and claims that depend therefrom**

Applicants have discovered a process for producing ethyl acetate which includes directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent. *See* amended independent claim 6.

*Papa* does not teach or suggest directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent. Specifically, *Papa* discloses:

In general it is also preferred to add some water to the distillation column to aid in forming the product ester-water azeotrope, since the amount of water normally distilled from the reactor is not generally sufficient to ensure a satisfactory aqueous azeotrope with the product ester. *See Papa* at Col. 7, lines 1 to 6.

Indeed in *Papa*, the stated azeotroping agent is water. Instead, in independent claim 1 of Applicants' invention, the organic phase rich in ethyl acetate, namely the product of the esterification reaction is directed to the reaction zone to act as an azeotroping agent. Specifically, Applicants state:

the use of line 30 in this manner...while still providing the necessary azeotroping agent to the reaction zone (See page 6, lines 24 to 26 of the specification and **Figure 1**).

*Papa* does not disclose ethyl acetate as an azeotroping agent.

*Spiske* does not cure the deficiencies of *Papa* because *Spiske* does not teach or suggest use of ethyl acetate as an azeotroping agent. Specifically, *Spiske* teaches a "recycle stream 10" of unconverted carboxylic acid and unconverted alcohol. *See Spiske* at Col. 3, lines 6 to 8. One of ordinary skill in the art would not be motivated by *Papa* or *Spiske* or their combination to direct the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent.

#### **Independent claim 10 and claims that depend therefrom**

Applicants have also discovered a process for producing ethyl acetate which includes directing at least a portion of the organic phase rich in ethyl acetate to a membrane separation unit to form a dried organic stream, and directing at least a portion of the dried organic stream to a distillation means to act as an azeotroping agent. *See* amended independent claim 10.

As discussed above, *Papa* combined with *Spiske* does not teach or suggest ethyl acetate as an azeotroping agent. Therefore, it follows that *Papa* combined with *Spiske* does not teach or

suggest ethyl acetate as an azeotroping agent in a distillation tower. Specifically, Applicants state:

[t]he dried organic stream can then be either processed further to produce pure ethyl acetate in the finishing column 38, or this dried stream can be used as an azeotroping agent in distillation tower 2. (See page 7, lines 4 to 6 of the specification and **Figure 1**).

Moreover, there is no motivation in the teachings of *Papa* combined with *Spiske* to motivate one of ordinary skill in the art to direct a portion of a dried organic stream including ethyl acetate to a distillation means to act as an azeotroping agent. Thus, without the benefit of Applicants' invention, one of ordinary skill in the art would not arrive at the process of independent Claims 6 and 10.

Applicants are considering providing additional evidence of unexpected results achieved with the claimed process. A 37 C.F.R. §1.132 *Declaration* will be filed if deemed appropriate and/or helpful to this case. The Examiner is requested to contact Counsel if such evidence is not submitted prior to renewed consideration of this case.

For at least these reasons, independent claims 6 and 10 and claims that depend therefrom are patentable over *Papa* combined with *Spiske*.